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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,027	12/04/2003	Angshuman Bezbaruah	VRT0090PIUS	8352
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CSA LLP 4807 SPICEWOOD SPRINGS RD. BLDG. 4, SUITE 201 AUSTIN, TX 78759			EXAMINER CYGIEL, GARY W	
			ART UNIT	PAPER NUMBER
			2188	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/728,027

Applicant(s)

BEZBARUAH ET AL.

Examiner

Gary W. Cygiel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. Claims 1-2,7-10,13,18, and 23 of this application conflict with claims 1 and 7-10 of Application No. 10/610139. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application.

Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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3. Claims 1-2,7-10,13,18, and 23 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim s 1 and 7-10 of copending Application No. 10/610139 in view of Gabber et al. [US PGPub No. 2003/0145179 A1].

The primary difference in the independent claims of the copending applications is *wherein at least one secondary node of the plurality of secondary nodes inserts the update in a respective log of updates to a respective copy of the data.*

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to remove the cited limitation as a simple decision in design choice.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 6 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 is dependent from Claim 1 but Claim 1 recites no determining step. The examiner will assume for the purposes of examination that Claim 6 is dependent from Claim 5.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 10-22 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The following is taken from the applicant's specification [¶0107]:

"It will be understood by those within the art that each block diagram component, flowchart step, operation and/or component illustrated by the use of examples can be implemented, individually and/or collectively, by a wide range of hardware, software, firmware, or any combination thereof."

The system of claims 10-17 can reasonably be interpreted to be software and as such is not patent eligible subject matter.

The following is taken from the applicant's specification [¶0100]:

"Applications resident with computer system 610 are generally stored on and accessed via a computer readable medium, such as a hard disk drive (e.g., fixed disk 644), an optical drive (e.g., optical drive 640), floppy disk unit 637 or other storage medium. Additionally, applications may be in the form of electronic signals modulated in accordance with the application and data communication technology when accessed via network modem 647 or interface 648."

The computer readable medium of claims 18-22 include carrier waves as disclosed above and are not patent eligible.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Gabber et al. [US PGPub 2003/0145179 A1] in view of Duprey et al. [US Patent No. 6,671,705].

Consider **Claims 1,10,13,18, and 23**,

Gabber teaches a method/system comprising:

a processor for executing instructions (Gabber:Fig 1:Item 103, host computer),
and

a memory to store the instructions (Gabber:Fig 1:Item 103, host computer),
wherein the instructions comprise

identifying instructions to identify a plurality of secondary nodes to which
an update to data is sent (Gabber:Fig 2:Item 203, system identifies storage

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elements (secondary nodes).). Gabber does not explicitly disclose using a log to maintain updates and further sending a notification associated with the log.\

Duprey does teach these elements, including:

wherein at least one secondary node of the plurality of secondary nodes inserts the update in a respective log of updates to a respective copy of the data (Duprey:Col 6:Lines 35-43 explain that each logical unit is associated with a storage processor (SP) and further Col 6:Lines 62-67 each SP maintains a write cache. Col 7:Lines 1-29 detail that the write log is maintained on both SP's to protect against failure. The write intent log is a log of updates and the two SPs are considered a plurality of secondary nodes.); and

sending instructions to send a notification to each of the plurality of secondary nodes when all of the plurality of secondary nodes have acknowledged the update (Duprey:Col 9 details the status changes that the mirrors go through whenever writes take place. This information is contained on each mirror Col 10:Lines 53-64. These state updates (notifications) are sent as each mirror changes state including a final update after the last mirror has acknowledged the update. Col 12:Lines 39-59 detail that the master needs to acknowledge the update otherwise the status is set to UNREACHABLE.).

Gabber and Duprey are related art solving similar problems such that they are both directed towards improvements in back-up system design through multiple remote mirrors/copies.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to implement the steps as taught by Duprey in the system of Gabber because keeping track of the updates and notifying each mirror of the status of the other mirrors provides an exceptionally robust fail-over system in comparison to Gabber alone.

Consider **Claims 2,11,14,16, and 24,**

The combination of Gabber and Duprey teaches the method/system of claim 2 wherein the instructions further comprise: clearing instructions to clear the update from the respective log of updates in response to receiving the notification (Duprey:Col 6:Lines 35-43, each LU is owned and accessed by only one SP. Col 15:Line 79-Col 16:Line 46, logic is free to remove write entry from write intent log after the update and after testing to ensure no mirrors need the update which occurs after or in response to the notification being sent indicating all mirrors are synchronized.).

Consider **Claims 3,15, and 20,**

The combination of Gabber and Duprey teaches the method/system of claim 2 wherein clearing the update from the respective log comprises updating a start-of-log pointer in the respective log (Gabber ¶0025 describes using a queue with pointers for each storage element. Further described is that messages are taken off the queue (cleared) and sends them to the storage element. This requires updating the pointers in each queue whatever the title of the pointer may be.).

Consider **Claims 4,16, and 21,**

The combination of Gabber and Duprey teaches the method/system of claim 2 wherein the clearing the update from the respective log comprises updating a pointer to a location in the respective log, wherein the pointer points to the location if the location contains a next update to clear (As described above, the pointer is updated when it is taken from the queue therefore it was pointing at the next update just prior to it being cleared.).

Consider **Claims 5.12,17,22, and 25,**

The combination of Gabber and Duprey teaches the method/system of claim 23 wherein the instructions further comprise

determining instructions to determine that a location of a next update in a first respective log of updates to a first respective copy of the data at a first secondary node of the secondary nodes differs from a corresponding location of the next update in a second respective log of updates to a second respective copy of the data at a second secondary node of the secondary nodes (Gabber ¶0024, a determination is made as to whether a particular storage element has up to date data.); and

second identifying instructions to identify a set of updates in the first respective log, wherein each update of the set of updates is not in the second respective log (Gabber:Fig 6:Item 610, getting missed information requires identifying and defining

updates which are present in the ACTIVE storage element and not present in the second storage element.); and

synchronizing instructions to synchronize the first respective copy and the second respective copy by applying the set of updates to the second respective copy (Gabber ¶0024, if it is determined that a storage element is not up to date then it is instructed to recover from another storage element. Gabber:Fig 6:Item 610, getting missed information is the same as applying the set of updates that differ between the first and second storage elements.).

Consider **Claim 6**,

The combination of Gabber and Duprey teaches the method of claim 1 wherein the determining occurs when a primary node maintaining the data fails (Gabber ¶0028-0030 describes a system which allows for failure and swaps to a second host element to act as the primary. The determining occurs at all times including when a primary node fails.).

Consider **Claim 7**,

The combination of Gabber and Duprey teaches the method of claim 1 further comprising: setting a sent indicator for the update for one of the plurality of secondary nodes when the update is sent to the one secondary node (Duprey:Col 11:Line 63-Col 12:Line 30, describes that image data contains a mirror image state which acts as an

indicator indicating sent status of updates (i.e. synchronized, unsynchronized and synchronizing)).

Consider **Claim 8**,

The combination of Gabber and Duprey teaches the method of claim 7 further comprising: setting a received indicator for the update for the one secondary node when an acknowledgement of the update is received from the one secondary node (Duprey:Col 11:Line 63-Col 12:Line 30, describes that image data contains a mirror image state which acts as an indicator indicating received status of updates (i.e. synchronized, unsynchronized and synchronizing)).

Consider **Claim 9**,

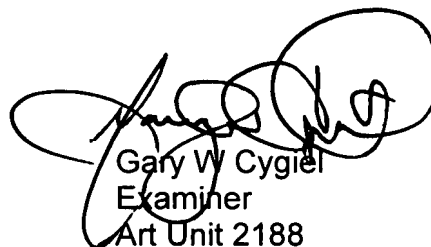
The combination of Gabber and Duprey teaches the method of claim 8 wherein the sending the notification to each of the plurality of secondary nodes comprises determining that a respective sent indicator and a respective received indicator for the update are set for each of the plurality of secondary nodes (Duprey:Col 9 details the status changes that the mirrors go through whenever writes take place. This information is contained on each mirror Col 10:Lines 53-64. These state updates (notifications) are sent as each mirror changes state including a final update after the last mirror has acknowledged the update. Since the update includes the status (i.e. synchronized, unsynchronized and synchronizing) the status of the state (sent/received indicator) must be determined when sending the notification.).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary W. Cygiel whose telephone number is (571)270-1170. The examiner can normally be reached on Monday through Thursdays 8:00am-12:00pm EST.

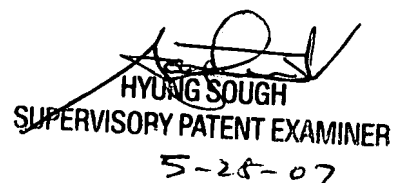
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on (571)272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Gary W. Cygiel
Examiner
Art Unit 2188

GWC 5/24/2007



HYUNG SOUGH
SUPERVISORY PATENT EXAMINER
5-28-07